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Redspot Physics 1000 MCQs with Helps | PDF Android App share download (14K) Iframe report download (14K) **Frequency Range of Hearing** The audible frequency range for an average human being is between 20 Hz to 20 kHz. Sounds below 20 Hz are called infrasound, which are not detectable by the human ear. Sounds above 20 kHz are referred to as ultrasound, which are also not detectable by the human ear. **Key Points** * The human ear can detect sounds in a frequency range from approximately 20 Hz to 20 kHz. * This range can vary slightly among different individuals and can diminish with age or exposure to loud noises. * Frequency refers to the number of times a wave oscillates per second, measured in Hertz (Hz). * Infrasound are sound waves with frequencies below the lower limit of human audibility (20 Hz) and can be used in various applications, including monitoring earthquakes and volcanic eruptions. * Ultrasound is widely used in medical imaging, cleaning, and industrial applications. **Protective Measures** * Avoiding loud noises * Using ear protection * Having regular hearing check-ups **India’s #1 Super Teachers for all govt. exams Under One Roof Enroll For Free Now With hundreds of Questions based on Physics, we help you gain expertise on General Science. All for free. Explore Testbook Learn to attain the subject expertise with us.** Platform Start offers comprehensive exam preparation with daily live masterclasses, practice question banks, and trusted by millions of students. A kilowatt hour (kW·h) measures energy consumption, commonly used in electric utility billing. One kW·h equals the energy consumed by a 1000-watt appliance for one hour. The Richter scale measures earthquake magnitude, with option 2 being correct. 'Decibel' is the unit of intensity of sound. Light wave is a type of transverse wave, where the movement of particles is at right angles to the motion of energy. This text discusses various types of waves and their characteristics. It highlights that sound waves have intensity levels ranging from 0 dB (threshold of hearing) to over 120 dB (threshold of pain). Additionally, it explains the concept of intensity in light, radio-waves, and heat, as well as its measurement units. The importance of measuring wind speed using anemometers is also mentioned, including their types and applications. Furthermore, the text briefly describes other devices such as barometers, manometers, and thermometers used to measure atmospheric pressure, gas or liquid pressure, and temperature respectively. An example of a longitudinal wave is a sound wave because its components vibrate parallel to its direction of propagation. On the other hand, light is a transverse wave because its components vibrate perpendicular to its direction of propagation. Therefore, option 1 regarding Newton's laws and their application in real-life scenarios is correct. Regarding a passenger thrown forward when a moving bus suddenly stops, this phenomenon can be explained by Newton's first law. This law states that a body remains at rest or continues moving with constant velocity unless acted upon by an external force. The principle of conservation of momentum also plays a crucial role here, where the sum of momenta before and after a collision remains unchanged. Newton's laws are essential in understanding various physical phenomena. His first law, also known as the law of inertia, states that a body at rest or moving with constant speed will continue to do so unless acted upon by an external force. The second law quantifies the effect of a force on motion, stating that force equals mass times acceleration (F = ma). Newton's third law emphasizes the reciprocal nature of forces between two interacting bodies. Newton's first law is particularly relevant in explaining how a passenger feels thrown forward when a moving bus suddenly stops. This phenomenon can be attributed to the sudden absence of the forward force that was propelling both the bus and its occupants, resulting in a feeling of being 'thrown' forward due to inertia. Because the book’s weight causes the table to deform slightly, pushing back on it like a coiled spring, India's #1 Learning Platform starts complete exam preparation daily live masterclasses practice question bank mock tests & quizzes trusted by 6.4 Crore+ students. At which point of the Earth is there no gravity? The correct answer is at the centre of the Earth. The centre of the Earth is where the mass around us can be considered to be condensed at the surface of the Earth itself, i.e., considering the Earth as a spherical shell. Inside a spherical shell, there is no change in potential as one moves inside, and since only a change in potential implies a force, there is no force. Hence the acceleration due to gravity is zero at the centre of the Earth. An echo returned in 2s. The correct answer is 342 m. Echoes are heard due to the phenomenon of reflection of sound waves. To hear the echo clearly, the reflecting object must be more than 17.2m from the sound source for the echo to be heard by a person standing at the source. The power developed by the gun is: The correct answer is 12250 W. Power is the amount of energy transferred or converted per unit time. The unit of power is watt or J/s. Its dimensional formula is [M L2 T-3]. Given: v = 700 m/s, m = 50 g = 0.05 kg, n/t = 60 bullets/min ⇒ 1 bullet/s Power developed by the gun is given by formula - Power = Work done / time = Energy consumed / time $Power = n \times \frac{{\frac{1}{2}m{v^2}}}{t}$ $Power = \frac{n}{t}\; \times \frac{1}{2}m{v^2}$ $Power = 1 \times \frac{1}{2} \times 0.05 \times Power = 12250$ watt India's #1 Learning Platform Start Complete Exam Preparation Daily Live MasterClasses Practice Question Bank Mock Tests & Quizzes Trusted by 6.4 Crore+ Students An object is placed at a distance of 10 cm in front of a double convex lens made of glass with a refractive index of 1.5. Both the radii of curvature are 20 cm. The position of the image formed is 20 cm on the same side as the object. Calculations: Given, Distance of the object from the lens = -10 cm Refractive index of the lens = 1.5 According to Len's Maker's formula, the focal length (f) of the lens is 20 cm. From the Lens equation, the position of the image (v) formed is -20 cm. India's #1 Learning Platform Start Complete Exam Preparation Daily Live MasterClasses Practice Question Bank Mock Tests & Quizzes Trusted by 6.4 Crore+ Students The value of one Angstrom is 10-4 micron. Key Points The question asks for the value in microns, not meters. If asked in meters, the value would be 1 Angstrom = 10-10 m. But since it's asked in microns, we can convert 1 mm to 10-3 m and 1 Angstrom to 10-4 × 10-6 m = 10-4 micron. Confusion Points An Angstrom is a unit of length used to measure very small distances. A micron is one-millionth of a meter (10−6 m) and one Angstrom is 10-4 micron. India's #1 Learning Platform Start Complete Exam Preparation Daily Live MasterClasses Practice Question Bank Mock Tests & Quizzes Trusted by 6.4 Crore+ Students Which of the following is NOT based on the heating effect of current? Electric heater, Electric bulb (with filament), and Electric iron are all based on the heating effect of current, but Microwave is not. Key Points A microwave oven uses microwaves to heat food. The correct answer is Microwave. Rewritten text: Microwaves use materials like plastics, glass, or ceramics to heat up food through the oscillation of water molecules. This occurs when the microwave frequency matches the resonance frequency of water. Some electric devices convert electrical energy into heat. Examples include electric heaters, light bulbs (with filaments), and irons. These appliances work on the principle of Joule heating. They generate heat by passing an electric current through a resistor. In the electromagnetic spectrum, gamma rays have the shortest wavelength and highest frequency. They are high-energy waves with wavelengths ranging from 10-12 meters and frequencies around 1020-1024 Hz. Gamma rays can penetrate deeply and are used in medicine for sterilization and cancer treatment. Aircraft movement is primarily driven by thrust force. Thrust overcomes drag, which slows down an airplane's forward motion, as well as the weight of a rocket. Additional information: * Drag force: Air resistance that slows down an aircraft's movement. * Gravity force: The force that pulls all objects towards the Earth. * Lift force: An upward force created by air flowing faster above and slower below a wing, keeping an airplane flying.